



RECEIVED
OCT 03 2001
TECH CENTER 1600/2900

SEQUENCE LISTING

<110> Hull, Roger
Harper, Glyn

<120> Banana streak virus promoter and detection

<130> 620-106

<140> US 09/622,978

<141> 2000-08-25

<150> PCT/GB99/00599

<151> 1999-02-26

<150> GB 9804293.0

<151> 1998-02-27

<160> 29

<170> PatentIn Ver. 2.1

<210> 1

<211> 7387

<212> DNA

<213> Banana streak virus

<400> 1

tgttatcaga gcaagggttcg ttttatggc tttcatgggg taattccctt agataggagc 60
cgaagggtctc tgcttttctc taatttaggtt acaagtttat gatttaaattt gtttaatttg 120
gagctgtatt cagttttctc tagaaaaaatg agcatgattt cgattatacg tggcaaggc 180
tgttagggaaa aatgattatg tttatgcta gttgtccaa gagagcatgc ctacccaaga 240
aaaagtaccc gaagagaatg gggaaaaat ttgttctcg catgtatgag gataatatcc 300
tagaaacaga acataaacctg cgtgaagttt ttaacaagcc aagataatat cctatataga 360
aacatggca tcgtgaagta taagactgac tgaactacaa gtcctttat aaacaaaagg 420
atcatagacc tctgtacgtc aatacgggtt aagcatcctg gaggagttt cctatctgt 480
ttacgaaaag aaagtcattc accttgcatc caatttatgg tcgagaaaac ttggatcaa 540
aaattccagg aatttctaaa ctcatctgaa ctcaactcaag ctcaacttga gtatcttgac 600
ttggcaacgg aagccaaagt ctcaacaaa gatcttgctc ataatttgc catcaacact 660
tatcgactaa gccttacagg gaaggtcctt tggacttctg gaaggaaaaa tcgggattta 720
cttgcaga taatcggtga gcaggaggct caaaaagaagg acttatttgg gttgcagaac 780
ttaagtaaga ttgtgcgcag ccagcgtaac gatcttaaga aggctcacga aaagctggac 840
gtcttgtctg atgagctta agctctcaga aaggactatc tgaaggcgccccttgagc 900
aaagaagacg ttgaggaatt agtttgcgt atctctgaac aacctaagtt catagagaag 960
caaactgagg ccttaactga ggagctgact aaagaagttc aaaatctgaa aaaaattatt 1020
catgactttt agcggaaagct catggatgt gtaattctat cacaagctct gcagtataacc 1080
aacaagcaat tgctggaca actgggtact gggatcccc tggagtaggg atatctgacc 1140
gtggatcggt gaacaacacc cagctcacaa gacaactcaa caccattata ttctgtgt 1200
caaagacaca acagaagtc ttgccttaa aagacacagt agcggacatc caaaaaccgct 1260
tgagaatact tgaaaggacc ggtgcaacat cagccggatc cccacaactt aagggtgaaa 1320
ttgacgccat caacgagaag ttatcaagaa ttcaacaaat tcaaggaggt caaccaagga 1380
aagacggtg tactgcggcc actagcaag tatttcaaga cccctacaaa cttctcgaa 1440
atttgaagta atggctcaaa gaccgagaat taccggatca agaaccacca ctgctgaaga 1500
agggacaccc ttaattgacg accaaataag ggaatataga agctccagaa gaggcagcata 1560
cgaagcccaa cgaattgcca ggcagaccgg caatattatt ggaagggtt taggacgaca 1620
accccgggag catacactat ctatgggtt agacccgaat tcggagctca gcagaagtct 1680

tgcccacaga gcaagaacag taccaggaga ggtactatat atgactcaac gagacagtcc 1740
 tgtaaataga atttacagaa acaggacaga agaaaagaatg ctgcgtaaacca acgggcaaca 1800
 agatagatct ttcatatatac aagaatcatt tgaggagcta gcctcagcag gatttgagta 1860
 catccatctg ggtgtattac aagttaggt ccagatcatg cataggacat atgcaggcac 1920
 gatggccta atagtcttc gtgatacactg atggactcatg gaaggagaag aaggcagatc 1980
 cattattgga gctatggagg ctgatctgtc acaaggccac caactaatct acgtcatccc 2040
 ggatataatg atgaccataa gggatttcta ccaacatgt acaaactgta tccttaactaa 2100
 gggataccag ggattccaag gtgaagcaaa tctgctgatt accaggagct gttagatgcag 2160
 actcaccataa gttcccaacg tcggattcgc ctataatatt caaagagtag tgtagtactt 2220
 aaactccaa ggcgttaaag ctataacaagc tcagaagctg agtacaacaa agtatcaggg 2280
 cactgaatgg aacatcaagc cctccaatgt ggttgcattca atgcaaccaa cgaatttgat 2340
 caccagagtc aactacgaca actcacggag tatacgatt ggttaattatc aagcaagcac 2400
 atcctcagcg ccacccaaat acaacgaaga tggagattca gatgtgaca tccaagccac 2460
 aatagagcat gttAACATGC tttatattga agatacatct gatactgact atccagtcat 2520
 ggcagctgaa gagaaatct ttccttttga aaacatggtg ggagaagatg acattatctc 2580
 ccaatttttgg gaaaatttgg atatcacgga tgatgaggaa gattccagat cacaatacgt 2640
 gatgaatctg gaagacaatg aagaattccc acaactcagg gaaattgaaa aagtcttac 2700
 ctcagtagct gaaacagcaa tcagttcata tagaccacca gatgctgaaa tgggtgaaga 2760
 agcacccgca tatgcaccag ctacaagtgc aacaggatgg gctggatcaa ggcctttccc 2820
 ctttatgccc aaaggaggac caaggagggt ggattccaac aatgaatttt attcattacc 2880
 tccagcacaa agtcggcaag gagccatgtt cgcatgcca atggacttt acatcaaagt 2940
 attcgaagg tggagagca ttacccttct acacatgacg gaaaagattt ttgataatgc 3000
 tgacgacaaa atgagataca tggagaacct tctcgagaa gacgagaaga agcacttcat 3060
 tgaatggagg atgaagtata cagcagaata tgagacaatg aaagctcaag cactcgaga 3120
 ccaaggtaca caaaatatac tcaatcaaatt tcgattgata ttctttttgg aaaatccgca 3180
 attaggaact actacttcac aagatgcggc ctataaaacc ttgaagagcc tggctgcac 3240
 agagatgaca gacacagcaa tctacagata catgaatgtat tatttcate tgcagccaa 3300
 aacaggaaga gcatgggcct cagaagaatt atccaaggaa ttcttacca aactaccaag 3360
 agtcttagga gatgagggtt aaaaaggcatt catggaaaaaa caccgaatg acacagtagg 3420
 gatcaccgca aggatcacct ttaccaaag atacctaaag gaactgtgtg aaaaggtgc 3480
 actacaaaaa agtattggca aaatggattt ctgcagaagc acgccatgc atggttata 3540
 cagagacaaatg tcatacagaa agtattggagc tagaaaaaaatg acatcctaca agggaaagcc 3600
 ccataaatcc catgttagga ttgtaagaa gaaatattta tccttgagaa agaaaaatttgc 3660
 caggtgttat gcctgtggag aagagggaca tttcgctct gaatgcaaga atccaagaaa 3720
 gatcatggat agatgtcaagg ttctggactc tctagacttga gaaatggat tagacgttat 3780
 ctcagtcggc tttgtatgaa atgacgtatc agacatctat tcaatagatg aagaagctga 3840
 taactacagg ttcacaaatg aaaaaatgaa aggcttcaag aactacgagg tctatatgtt 3900
 aagaatggaa gagatggatg agccaaggaa atatctcgta ggagaaccat ctgaatggag 3960
 atctaagatg aaagtctca gaagacagta ttctgtcaag catgagtggaa aatttgaaga 4020
 gactcatgtg actatctgca aggcattgcgg atctgaagca gtccttaagc ataggattga 4080
 ctgctgaaa tgtgagatga ctgtttgtct catgtgc当地 ccctggttct ataaaaacgt 4140
 caacactgaa gaagttttaaaa aaccacatg tgcgtatgaa aggtaatttgc attggagaga 4200
 tattgcacta aaacaacacg aagttctcaa gaccacgtt gcaaatgaga aacaactctc 4260
 agaggaagta gaaatcttgc gaaaacaaaag caaagagctg aaggaaaaag aaccaatcat 4320
 ctttgaagaa gacacggagg aaacagctca actgatacag aagctagaag acgtggaaag 4380
 agaaaatggat cttctaaata tccttatcaa gcagaaggaa aaggatgaaa tccaatacc 4440
 caatgagatt atagagctca aggaaagaat aaaagatttgc gacgacaa acgaggacaa 4500
 ggaagaacaa gtaaatgtcc ttgaaatgttgc gtcgtatgaa gtcctgaggc caaggaacaa 4560
 ccatctcaat atcaaatgtg agatagaatg caaaaacaag aaggtatgc tgaacgcaat 4620
 tcttgacact ggagctacag tctgtgtac agatgagagg atgatacctt caggaatgaa 4680
 agagcaggcc aaaaacaaaaa tcattattcg aggactcaac ggactcactg aagtaaacgaa 4740
 ggtgacatca gccccggaaagc tatgggttgg taagcaatgg ttctacactt ctcacactt 4800
 tattatgcct tcattatgtc atggagatca tatgtatcata ggcgtatgaa ttatttagaa 4860
 tgggtggctt aggatgaaa atggtaggtt cacaattttt aagatcatgaa caacagtgaa 4920
 agccccacca atagttcatg agctgtatca tattgtatgaa ctgtactgg aacttcatgaa 4980
 atactataac atatgtgcag ctgagatgtc tagagggaa atttctgaa aatttataatc 5040
 tcctgacatt attggaaaaaa tgaaaaattt gggatatattt ggagaagaac ctctcaaaca 5100

ttgggagaaa aatcaggta aatgttagat tgaagtaaaa aaccctgata tgattattga 5160
 agacaggcca taaaacatg ttaccctac aatgaaagaa accatggcta agcatgtcca 5220
 gaagcttta gaacttaaag tgatcaggcc ttcaagctca aaacatagaa caacggcaat 5280
 gatagtagaa tctggacag aggttgaccc aatgactgaa aaggaaagaa gaggaaagga 5340
 gagattgggtg ttaactata agaggctgaa tgataaacact gaaaaagacc agtacagtt 5400
 gcctgaaattt aacaccatta ttaagagaat tggaaatgcc aagatctata gcaagttga 5460
 ttaaagagt gggtttcattc aagtagcaat ggaccaggag tctattccct ggacggcatt 5520
 ttggctata gatggctgt atgagtggt agttatgccc ttggactta aaaatgctcc 5580
 tgcattt caacgaaaaa tggacaattt cttagaggg acagaggatt ttattgcgg 5640
 atacattgt gacatactag tatttctgt aacaatacac caacataaaag agcatttga 5700
 gaaatttatg acaatctcg agaaaaatgg tttagtcctt agtccgacaa aaatgaaaat 5760
 tggacaaga cagattgact tccttaggtc aactattgaa aactcaaaaa ttaagttgc 5820
 gcctcatattt attaaaaaga tcatcgaaat gaaagatgaa gaactaaagg aagtgaaagg 5880
 attaaggaaa tggctggaa tccttaatta tgcttaggac tacattccga aactgggaaa 5940
 aatccttgg acaactgtatc ccaaaacgag tcctaattgaa gaaagaagaa tgaataactca 6000
 ggactggaaa attgtcaaag aggtcaagga agttttagct aatctgccag aacttgagtt 6060
 accccccgaa aaagctatca tgataattt aacggatggc tttatggaa gctggggagg 6120
 ggtatgtaa tggaaaaactg atagtctgca gccaagatgg tcagaaaaa tctgtgctt 6180
 tgcgagcggg aaatttcaactc ccatcaaaaag cacaatttgc acagagatac agctgtaat 6240
 aaacagttt gacaagttca agatataattt tcttgataag aaagagctca taatcagaac 6300
 tgacagtcaa gcaatagtga gcttttacaa gaaaaggcgt gatcataaac catcaagagt 6360
 cagatggctt gccttcacag attacattac cgggacaggt cttaggatta agtttgaaca 6420
 cattgacgga aaggacaacg ttttagcaga cactctgtca agactggtaa agattattct 6480
 ccattccggaa aagcatcaat ctgaagggtgt ttgtatcaat gcagtggagg agtttca 6540
 caagggaaac accgatgcaa aacagagagt taatgtatgtt gtaaaaagat atgaagactg 6600
 gttgagcaaa ggctacaggt tgcataat caatgtgcta acactaagt aagagccgg 6660
 ttcaaatgtt ggtcaata aaccagcaaa actgaagatc tccagaaatcc ccaagaaatcc 6720
 tgacagggag ttttactcct gtgaaactaa cacttgtttt acttgggtct gggaaagacaa 6780
 attgactcgt ttgtcagga aaagatcaga tgggagaaga aacttgaaga aatatcagaa 6840
 gactcaactgt gggaggaatt actgagggag caagaaaatc tgcgtgcaga acaagaatat 6900
 ctatttgaag atgctctaga tctgttggat atcagtaatg atgactgaag cgaaagtggc 6960
 ggacccttac cacgtgttga taccacccgg tttgttggact gataagatgc ggagtggact 7020
 ggataccact cactttatgt aaagaggaga caaagtataa tgtcttttta tttaagttt 7080
 gtcgggtgtcg ttgtctatgc acgcacgtt acctttatgtt actttgcagg atttttacgc 7140
 aaagttgtta ggcagagac atgtgtatgtt gtttatctgc attattgggtg gatgccacct 7200
 aacgtatgcca gaaagctcca caactctta tataaggagc ttgttattca gtttgcac 7260
 acgcaccaca acgcgagttt actcctgtt tgagaaataa aaacttctgt gcttgcac 7320
 cactttgtc gagttcaactt tttgtgcgagta gagcgcacaa tccttagttcc gcgcgcgt 7380
 acccgtc 7387

<210> 2
 <211> 451
 <212> DNA
 <213> Banana streak virus

<400> 2
 agaacaagaa tatcttattt aagatgtctt agatctgtt gatatcagta atgatgactg 60
 aacggaaagt ggcggacccc taccacgtgt tgatccaac cgggtgttgaag actgataaga 120
 tgcggagtgt gctggatacc actcaattt tgtaaagagg agacaaagta taatgtctct 180
 ttatatttaag tttgtcggtt tcgttgcata gtcacgcacg atgaccttta gtgaactttt 240
 caggattttt acgcaaagttt gttaggccag agacatgtga tgatgttctt ctgcatttt 300
 ggtggatgcc acctaacgtt gccagaaagc tccacaactc tctatataag gggccttgc 360
 ttcaggttgc aaacacgcac cacaacgcga gtttactcctt gatttgagaa ataaaaactt 420
 ctgtgttgc aacacactttt gttgtcgatc a 451

<210> 3
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 3 18
ggaatgaaag agcaggcc

<210> 4
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 4 24
agtcatgggg tcaacctctg tccc

<210> 5
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 5 19
tgcgggtgct tcttcaccc

<210> 6
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 6 20
tatgcaccag ctacaagtgc

<210> 7
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 7
atcttgcgct ctactcgc

18

<210> 8
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 8
gccagatcta agcttccgg gataatcaga actgacagtc a

41

<210> 9
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 9
gccccatgga ttgtatgcaa ggtgaa

26

<210> 10
<211> 54
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 10
aaccatgaa gacgccaaaa acataaagaa aggcccggcg ccattctatc ccct

54

<210> 11
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 11
gttagttct gcttctacct t

21

<210> 12
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 12
gtggcccccgttgaatttggaa a 21

<210> 13
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 13
aggtagagca gaaacttacc tgataccctt tgtattta 38

<210> 14
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 14
ttccaattca gcgggggcca cctgcacatc aacaaattt 39

<210> 15
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 15
actcttagatt acaatagcta a 21

<210> 16
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 16
actaaaacgc ctataactcc 20

<210> 17
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 17
gctccaataac ccataagaa

19

<210> 18
<211> 8
<212> PRT
<213> Musa acuminata

<400> 18
Ala Ser Phe Tyr Asn Pro Gly Ser
1 5

<210> 19
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 19
gcgtcggtc ayaaccgggr agc

23

<210> 20
<211> 7
<212> PRT
<213> Musa acuminata

<400> 20
Glu Pro Arg Phe Glu Ala Met
1 5

<210> 21
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<221> misc_feature
<222> (5)
<223> n is a or g or c or t

<220>
<223> Description of Artificial Sequence: Primer

<400> 21
scywncgaak cttggmwcc

19

<210> 22
<211> 23
<212> DNA
<213> Cauliflower mosaic virus

<400> 22
cactgacgta agggatgacg cac

23

<210> 23
<211> 13
<212> DNA
<213> Cauliflower mosaic virus

<400> 23
ctcttatataa gca

13

<210> 24
<211> 23
<212> DNA
<213> Commelina yellow mottle virus

<400> 24
tgatgatgtc attgatgacg gcg

23

<210> 25
<211> 13
<212> DNA
<213> Commelina yellow mottle virus

<400> 25
ccttatttaa gca

13

<210> 26
<211> 23
<212> DNA
<213> Figwort mosaic virus

<400> 26
gtattacgaa cgcatgtacg aca

23

<210> 27
<211> 13
<212> DNA
<213> Figwort mosaic virus

<400> 27
atctat~~ttaa~~ aga

13

<210> 28
<211> 21
<212> DNA
<213> Banana streak virus

<400> 28
tagtcacgca c~~gat~~gac~~ttt~~ t

21

<210> 29
<211> 13
<212> DNA
<213> Banana streak virus

<400> 29
ctctatataa gga

13